HOMEWORK-0

Q1)

a) The answer is 1, because as the limit of x approaches to infinity, we can compare the growth rate of the polynomials by their leading terms.
x^3 grows faster than $7x^2$ as x approaches infinity. So, answer is 1.

b) The answer is 1 because of the same reason. The leading term x^7 grows faster than the leading term x^6 as x approaches infinity.

c) The answer is 2.

The leading term $4x^4$ grows faster than x^4. as x approaches infinity.

[Got visual help from desmos]

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Q21

a) $\log_2(x) = 8$

$\Rightarrow 2^8 = x$

$\Rightarrow x = 256$

b) $\log_{\frac{1}{5}}(x) = \log_{\frac{1}{5}}(2) + 25$

$\Rightarrow \log_{\frac{1}{5}}(x) = \log_{\frac{1}{5}}$

couldn't solve

c) $x = \log_4(32)$

we can rewrite this according to a definition of logarithm →

$4^x = 32$

$\Rightarrow 4^x = 2^5$

$\Rightarrow 2^{2x} = 2^5$

$\therefore 2x = 5$

$\Rightarrow x = 5/2$

Q3) Howdy. Hello, Hey

Because we are changing the 0 index value of the array. Or we can say call by reference.

Q41

```
import java.util.Random

Public class Dice {
    private int sides;
    private Random random;
    public Dice() {
        this.sides = 6;
        this.random = new Random();
    }

public Dice (int sides); {
    this.side = sides;
    this.random = new Random;
}

 Public int roll() {
    return random.nextInt(sides);

}

Public static void main (String[] args){
    Dice dice = new Dice(6);
    for (int i=0 ;i<3; i++) {
     int roll = dice.roll();
   System.out.println("Roll" + (i)+":" +roll);
  }
}
}
```